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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RASMUS RETTIG, CHRISTIAN BAUER and, BIRGIT VOGELGESANG

Appeal 2009-014690
Application 10/588,678
Technology Center 2800

Before JOHN A. JEFFERY, THU A. DANG, and CAROLYN D. THOMAS, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-3, 5, 6, and 8-10. Claims 4 and 7 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

A. INVENTION

According to Appellants, the invention relates to a magnetic sensor arrangement for sensing the movement of elements moved in linear or rotary fashion (Spec. 1, ll. 7-9).

B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary:

1. A magnetic sensor arrangement, having

- magnetically sensitive sensor elements (7, 8) whose electrical properties are changeable as a function of a magnetic field that a moving, passive transmitter element (11) is able to influence, with the magnetic field being substantially perpendicular to the sensor elements (7, 8),

wherein

- the magnetic sensor arrangement (1) has two sensor elements (7, 8) in a gradiometer arrangement that are each respectively associated with one of two regions (4, 5) of a permanent magnet embodied in the form of a gap magnet (2), which regions are spaced apart from each other by a predetermined distance (sa),

- the sensor elements (7, 8) are arranged one after the other in a direction of movement of the transmitter element (11),

- the sensor elements (7, 8) are associated with edges of a gap (21) in a rotary direction of the transmitter element,

- the magnetic regions (4, 5) and the permanent gap magnet (2; 20) - in terms of the dimensions (h, b, t), the gap width (sa), the gap depth (st), and their positions in relation to the sensor elements (7, 8) - are situated so as to minimize the offset of the output signal of the sensor elements (7, 8) in the gradiometer arrangement.

C. REJECTION

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Eckardt	US 4,712,064	Dec. 08, 1987
Higgs	US 4,859,941	Aug. 22, 1989
Wu	US 5,304,926	Apr. 19, 1994
Wilkinson	US 6,050,242	Apr. 18, 2000

Claims 1, 3, 8 and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Eckardt.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wilkinson.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Wu.

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of Higgs.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Eckardt in view of Higgs.

II. ISSUES

The dispositive issues before us are whether the Examiner has erred in determining that:

1. Eckardt discloses that "the sensor elements are *associated with* edges of a gap in a rotary direction of the transmitter element" (claim 1, emphasis added);

2. Wilkinson discloses "a permanent magnet embodied in the form of a *gap* magnet" wherein *regions* of the permanent magnet "are *spaced apart* from each other by a predetermined distance" (claim 1, emphasis added); and

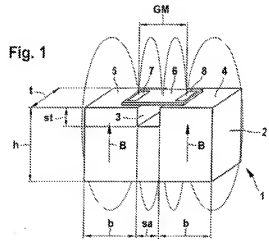
3. Wu discloses magnetically sensitive sensor elements with electrical properties "changeable as a function of a magnetic field that a moving, passive transmitter element is able to influence, with the magnetic field being *substantially perpendicular* to the sensor elements" (claim 1, emphasis added).

III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

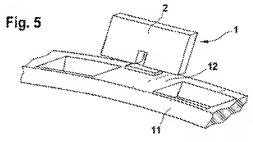
Appellants' Invention

1. Appellants' Figure 1 is reproduced below:



Appellants' Figure 1 discloses a magnetic sensor arrangement 1, which has a permanent magnet embodied in the form of a gap magnet 2, wherein, on both sides of a gap 3, the gap magnet has regions 4 and 5 that are magnetized in the same direction and wherein the sensor 6 has two magnetoresistive sensor elements 7 and 8 (p. 7, l. 27 to p. 8, l. 4; Fig. 1).

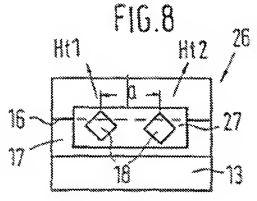
2. Appellants' Figure 5 is reproduced below:



Appellants' Figure 5 depicts that a transmitter element 11 provided with teeth 12 is moved past the magnetic sensor element (Fig. 5).

Eckardt

3. Eckardt's Figure 8 is reproduced below:



Eckardt's Figure 8 discloses a sensor 26 wherein a substrate 27 is mounted on the lower front face of the stationary mounted permanent magnet 27 on which two bridge circuits 18 are provided in the area edge 16 of the permanent magnet and wherein the bridge

circuits 18 are disposed in direction of groove 17 and thereby in direction of a rotating spur gear (Figs. 8; col. 4, l. 64 to col. 5, l. 7).

Wilkinson

4. Wilkinson's Figure 6 is reproduced below:

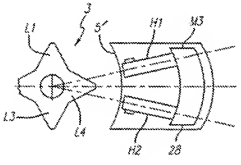


FIG. 6

Wilkinson's Figure 6 discloses a sensor module having sensors H1 and H2 arranged along a curvilinear facial surface 5' of a module 28, wherein a curved magnet M3 may also be formed to provide the required back bias for sensors H1 and H2 (Fig. 6; col. 11, l. 64 to col. 12, l. 7).

Wu

5. Wu's Figure 1 is reproduced below:

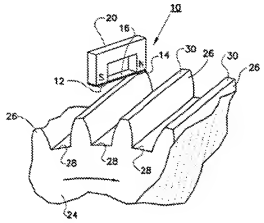


Fig.1

Wu's Figure 1 discloses a magnet 20 that provides a means for disposing a first magnetically sensitive device 12 in a magnetic field of a first direction and for disposing the second magnetically sensitive device 14 in a magnetic field of a second direction (col. 3, ll. 40-49; Fig. 1).

IV. ANALYSIS

Eckardt

Appellants contend that, in Eckardt, "the slot (17) is formed in the movement direction of the transmitter wheel" and therefore "the gradiometer principle will no longer be achieved" (App. Br. 10). According to Appellants, "the arrangement of both sensor elements one after the other in the movement direction must be maintained and furthermore both sensor

elements must be arranged at the edges of the gap in the applicant's invention" (*id.*).

However, the Examiner finds that "Eckardt explicitly discloses the sensors spaced apart in the direction of movement of the transmitter element" (Ans. 9). The Examiner notes that "the claim does not define how is this association is carried out and thus the sensors of Eckart [sic] are 'associated' with 'edges of a gap in a rotary direction of the transmitter element' [as required by claim 1]" (*id.*). That is, the Examiner finds that "sensors 18 are 'associated' with gap 17" and that "edges of gap 17 are in rotary direction Z" (*id.*). The Examiner then further notes that "a gradiometer is defined as an instrument for measuring the change of a physical quantity and thus the sensors measuring the change in rotation of the transmitter element 29 in the apparatus meets the gradiometer principle" (Ans. 10).

Appellants' contention that "the gradiometer principle will no longer be achieved" in Eckardt because "the slot (17) is formed in the movement direction of the transmitter wheel" (App. Br. 10) is not commensurate in scope with the language of claim 1. That is, claim 1 does not preclude any such arrangement of the slot/gap, but merely requires that the sensor elements are "associated" with edges of a gap in a rotary direction.

To determine whether Eckardt discloses that "the sensor elements are associated with edges of a gap in a rotary direction of the transmitter element" as recited in claim 1, we give the claim its broadest reasonable interpretation consistent with Appellants' Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). However, we will not read

limitations from the Specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Claim 1 does not define what "associated" is to mean, include, or represent other than the sensor elements are associated with edges of a gap. As shown in Appellants' Specification, the sensor elements are located in relation to the edges of a gap (FF 1). Thus, we give this claim limitation its broadest reasonable interpretation as requiring that the sensors be located in relation to the edges of a gap, consistent with the Specification.

Eckardt discloses bridge circuits of a sensor provided on a substrate mounted in the area edge of a gap that are disposed in the direction of a rotating spur gear (FF 3). We find claim 1's "sensor elements" to read on Eckardt's bridge circuits disposed in a rotary direction of a transmitter element. Since the bridge circuits are mounted on a substrate mounted in the area edge of a gap, the bridge circuits are located in relation to the edge of a gap. In view of our claim construction above, we find Eckardt to disclose that "the sensor elements are associated with edges of a gap in a rotary direction of the transmitter element" as recited in claim 1.

Accordingly, we find that Appellants have not shown that the Examiner erred in rejecting claim 1 and claims 3, 8, and 10 depending therefrom and falling therewith under 35 U.S.C. § 102(b) over Eckardt.

Wilkinson

Appellants contend that, in Wilkinson, "there is no gap 3 in the magnets, which is defined in Claim 1 of the present application" (App. Br. 12). Though the Examiner finds that "FIG. 6 of Wilkinson … illustrates the curved magnet" wherein "[t]he curved shape provides a gap between front end corners of the magnet" (Ans. 12), we do not find any teachings of "a

permanent magnet embodied in the form of a *gap* magnet" wherein regions of the permanent magnet "are *spaced apart* from each other by a predetermined distance" (claim 1, emphasis added) in the sections of Wilkinson relied upon by the Examiner.

Wilkinson discloses sensors arranged along a curvilinear facial surface of a curved magnet (FF 4). We do not find any teaching of a "gap" magnet having regions that are "spaced apart" as required by claim 1. That is, we do not find any gap in the curved magnet or any regions that are spaced apart on the curve.

Accordingly, we find that Appellants have shown that the Examiner erred in rejecting claims 1 and claim 2 standing therewith under 35 U.S.C. § 102(b) over Wilkinson.

Wu

Appellants contend that "the arrangement disclosed in … Wu is different" because, in Appellants' invention, "both sensors have a magnetic field with a direction B" (App. Br. 14). However, the Examiner finds that "the Wu apparatus is a u-shaped magnet with a North and South field emanating from each … respective sensors mounted … thereof" and "Wu thus discloses two portions of the magnetic field of the magnet, albeit different polarities thereof, substantially perpendicular to the sensor elements" (Ans. 14). The Examiner notes that "claim 1 only requires the magnetic field to be 'substantially perpendicular to the sensor elements'" and "it is silent as to which direction or any requirement the same North or South poles pass through each sensor" (*id.*).

Appellants' contention that "the arrangement disclosed in Wu is different" because, in Appellants' invention, "both sensors have a magnetic

field with a direction B" (App. Br. 14) is not commensurate in scope with the language of claim 1. That is, claim 1 does not require any such magnetic field "with a direction B" As the Examiner notes, "claim 1 only requires the magnetic field to be 'substantially perpendicular to the sensor elements'" (Ans. 14).

Claim 1 does not define what "substantially perpendicular" is to mean, include or represent other than the magnetic field is *substantially* perpendicular to the sensor elements. As shown in Appellants' Specification, the magnetic field is not in the same direction as the sensor elements (FF 1), wherein the passive transmitter element moving past the sensor elements one after another is able to influence the magnetic field (FF 2). Thus, we give this claim limitation "substantially perpendicular to the sensor elements" its broadest reasonable interpretation as requiring that the magnetic field not be in the same direction as the sensor elements wherein the transmitter element moving past the sensor elements one after another is able to influence the magnetic field, consistent with the Specification.

Wu discloses a magnet with magnetically sensitive devices disposed one after another in the moving direction of a transmitter element, wherein the magnetic field is not in the same direction as the magnetically sensitive devices (FF 5). In view of our claim construction above, we find Wu to disclose magnetically sensitive sensor elements with electrical properties "changeable as a function of a magnetic field that a moving, passive transmitter element is able to influence, with the magnetic field being substantially perpendicular to the sensor elements" as recited in claim 1. We find no error in the Examiner's finding that Wu "discloses two portions of the magnetic field of the magnet, albeit different polarities thereof,

substantially perpendicular to the sensor elements" (Ans. 14). As the Examiner notes, "claim 1 ... is silent as to which direction or any requirement the same North or South poles pass through each sensor" (*id.*).

Accordingly, we find that Appellants have not shown that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 102(b) over Wu.

Wu in view of Higgs and Wu in view Eckardt

As to claims 5, 6 and 9, Appellants merely contend that "none of these two references disclose the new features of the present invention defined in amended Claim 1, from which [the claims] now depend" (App. Br. 16-17). As discussed above with respect to claim 1, we find no deficiencies in the teachings of Wu or Eckardt. Accordingly, we also affirm the rejection of claims 5 and 6, depending from claim 1, under 35 U.S.C. § 103(a) over Wu in view of Higgs; and affirm the rejection of claim 9 depending from claim 1 under 35 U.S.C. § 103(a) over Eckardt in view of Higgs.

V. CONCLUSION AND DECISION

The Examiner's rejection of claims 1, 3, 8 and 10 under 35 U.S.C. § 102(b) and of claims 5, 6, and 9 under 35 U.S.C. § 103(a) is affirmed. The Examiner's rejection of claim 2 under 35 U.S.C. § 102(b) is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

peb